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ABSTRACT

Poorly planned implementation of microcomputers has been shown to increase stress symptoms. Concerns have also been raised about the impact of new technology on the quality of the work environment. Programming expertise alone is not sufficient to prevent these problems. This paper therefore describes the role that psychologists can play in designing computer systems that both increase productivity and improve the quality of the work environment. A case study of a child welfare agency is discussed. Seven references are included. (Author)

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TECHNOLOGY AND STRESS IN THE WORKPLACE: THE ROLE OF THE CONSULTING PSYCHOLOGIST

Presented at the Eastern Psychological Assoication Meeting

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Abstract

Poorly planned implementation of microcomputers has been shown to increase stress symptoms. Concerns have also been raised about the impact of new technology on the quality of the work environment. Programming expertise alone is not sufficient to prevent these problems. The current paper describes the role that psychologists can play in designing computer systems which both increase productivity and improve the quality of the work environment. A case study of a child welfare agency is discussed.

Technology and Stress Reduction in the Workplace : The Role of the Consulting Psychologist.

Problem or Major Purpose:

There has been a virtual explosion in the amount of new technology which has been introduced into the workplace in recent years. The mass marketing of personal computers and Local Area Networks has fundamentally changed the manner in which information and data are processed in the modern work environment. There are now approximately twenty-eight million video display terminals in American workplaces (National Academy of Sciences, 1987). From 1976-1986, the growth rate for video display terminals (VDTs) has averaged 47% per year (National Academy of Sciences, 1987).

There is wide spread agreement that personal computers significantly increase productivity. However, the introduction of this technology into the work environment has also raised a number of serious concerns. A number of studies have linked VDT use with an increase in stress related symptoms (e.g. Johansson & Aronsson, 1980). Perhaps the most documented problems associated with increased VDT use is the so-called VDT syndrome; a cluster of symptoms including eye problems, headaches, and musculoskeletal complaints. In addition, the introduction of microcomputers into a work environment can increase the number of low control and high demand jobs. These job characteristics have been associated with increased risk of cardiovascular disease (Karasek,

and high demand jobs. These job characteristics have been associated with increased risk of cardiovascular disease (Karasek, Theorell, Schwartz, Schnall, Pieper, & Michelea, 1988).

Clearly then, the introduction of this technology is not without cost in human terms. However, the technology itself does not inevitably lead to an increase in physical and psychological symptoms. The consequences of new office technologies depend upon how these technologies are implemented (Office of Technology Assessment, 1985).

The purpose of the present paper is to describe the role that psychologists can play in such an implementation process. The case will be made that psychologists, in conjunction with technical experts, can facilitate the introduction of new technology and significantly decrease the risk of the technology degrading rather than enhancing the quality of the work environment. This paper will describe a case study of such a process which took place in a public child welfare agency. An empirical evaluation of the project was reported elsewhere (Cahill & Feldman, 1988). Results indicated that the project was successful in improving levels of job satisfaction and autonomy, and did not lead to an increase in stress related symptoms. The current paper will focus on the critical elements in the consultation process during the design of a new computer system which led to these results.

Description of setting and role of psychologist:

The agency had installed a centralized, mainframe computer several years prior to the current project. This implementation took a considerable amount of technical resources. However, the net effect was to increase the amount of staff discontent with the paperwork system. In addition, a number of jobs were created which consisted of repetitive data entry with very little control over the work process.

A labor/management stress committee decided to implement a new computer system which was more responsive to the needs of the staff. The psychologist was responsible assisting in the design of this system. Specific examples of input included:

a) Mediation between labor and management:

Both the professional and clerical staff in this agency were unionized. Despite a considerable amount of mistrust between the two sides the consulting psychologist was able to find some areas of common ground around the paperwork problem. Support from both labor and management greatly facilitated the implementation of the program.

b) Assessing the attitudes of the staff:

Questionnaires sent out to the staff indicated strong resistance to any changes in technology. Follow-up interviews with both professional and clerical staff indicated a number of specific problems with the existing system. These problems were taken into consideration in the new system. In addition, a training program was designed to improve staff attitudes toward the new

technology.

c) Educating managers and staff on ergonomics:

Ergonomic considerations, including proper chairs, screens, has been shown to be a cost effective way of preventing many of the stress related problems of VDTs. These issues were discussed before any hardware was purchased. This led to the agency to buy ergonomically correct equipment for staff.

d) Designing a stress education program for the staff:

This program enabled the clerical staff to be aware of the common stress symptoms related to VDT use as well as providing them with some techniques to prevent or cope with them.

e) Incorporating relevant aspects of work organization into system design:

Prior research has identified several aspects of the work environment which can become problematic with the improper implementation of VDTs. These include, low autonomy, high demand, overload, underload, and the pace of work (Johansson, 1979). The current project incorporated these findings into the system design. Considerable effort went in to insuring that workers had local control and access to the information and that the system increase levels of autonomy and decrease excessive levels of overload and underload.

f) Design of reports and system output:

Many reports generated by computers contain too much information or information presented in a confusing format (Rapp & Poertner, 1986) Research on memory and information processing was

incorporated into the system design in order for the output to be more effectively presented to the staff.

g) Increasing rather than decreasing the skills of clerical staff:

Poorly planned implementation of new technology can create low skill and dead end jobs. The net effect of the current project was to increase the skills of the clerical staff and to provide a career ladder for the staff who mastered the skills.

Summary and Conclusions:

Unlike prior technological changes in the agency, the microcomputer project generated a great deal of participation and enthusiasm from the staff. Psychological and behavioral considerations were critical to the successful implementation of the computer system.

American workplaces in the United States are expending billions of dollars to purchase computer hardware and software. The project described here demonstrated how psychologists can play a pivotal role in designing computer systems which both increase productivity and improve the work environment.

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